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最終頁に続く

(54)【発明の名称】　原稿搬送装置

(57)【特許請求の範囲】

【請求項１】　原稿を走査するための走査部に配置するプラテンと、

原稿トレイに載置された原稿の上のものから１枚ずつ分離して給紙する給紙手段と、

前記走査後の原稿を受ける排出トレイと、を有し、

前記走査部の上方の位置に前記給紙手段と前記排出トレイとを有する原稿搬送手段において、

前記原稿は、

原稿トレイから分離されて給紙後、折り返されてプラテン上に搬送されて走査され、

その後、再度折り返されて反転路に前記給紙手段を出た方向と同じ方向に差し入れられ、

さらに、前記差し入れられた方向と同じ側から出されて、再度折り返されて排出トレイに排出されることを特

徴とする原稿搬送装置。

【請求項２】　原稿トレイに載置された原稿の上のものから１枚ずつ分離して給紙する給紙手段と、

前記原稿トレイからプラテン上に向けて原稿を搬送する給紙路と、

前記給紙路に接続されてその一部が共用される経路であって、片面走査済みの原稿を反転させて、前記原稿の裏面をプラテンに向けて位置させる作用を行う反転経路と、

前記プラテン上で正逆方向に駆動される搬送ベルトを設けた原稿搬送部と、

前記原稿搬送部の上部に配置する原稿トレイおよび排出トレイと、

前記原稿搬送部と排出トレイとの間を接続し、走査済みの原稿を排出トレイに向けて直接送り出す手段と、反転

* NOTICES *

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] It is especially related with the manuscript transport device which a manuscript tray and a discharge tray consist of so that it may be arranged in the upper part of the main part of a copying machine and may not project on both sides of equipment about the automatic manuscript feed gear which prepares this invention in electronic copying machines, such as an automatic double-sided copying machine.
[0002]
[Description of the Prior Art] Like the common electronic copying machine, with the electronic copying machine using an electrophotography method, the information which scanned the image of a manuscript was transmitted to image support, such as a photo conductor drum, and the device which forms a toner image in this photo conductor drum is established. And the toner image formed in said photo conductor drum is imprinted in a form, a copy is created through an anchorage device, and the device which turns the one side copy to a discharge tray as it is, and discharges it is used. Moreover, with the equipment constituted as an automatic double-sided copying machine, the device in which the form created as an one side copy is sent out through the reversal device arranged inside equipment is established. And the mode of a copy on the back is made to correspond, and an one side copy is turned and sent out to the image imprint section, and after imprinting another toner image at the rear face of a form and creating a double-sided copy, he is trying to discharge towards a discharge tray.
[0003] The automatic manuscript feed gear is conventionally arranged to an automatic double-sided copying machine which was mentioned above, reversing automatically the manuscript which has an image at the table rear face, respectively, it sets to platen glass and the equipment which is made to read an image is used. For example, in the automatic manuscript feed gear shown in JP,63-196427,A etc., the device in which a manuscript is reversed is prepared in the feed zone which platen glass is made to correspond, arranges the belt driven to positive hard flow, and is arranged between this belt and a manuscript tray.
[0004] And after positioning and scanning the 1st page side of the manuscript discharged from a manuscript tray to a platen, carrying out the inversion drive of the belt and making it reversed through a reversal path, the 2nd page side of a manuscript is positioned to platen glass, and it enables it to make a copy on the back correspond. Therefore, when using an automatic manuscript feed gear which was mentioned above, through the reversal way established in the interior of this equipment only by setting a double-sided manuscript to the manuscript tray, a manuscript can be reversed automatically and the image of both sides of a manuscript can be scanned easily.
[0005]
[Problem(s) to be Solved by the Invention] However, in the automatic manuscript feed gear constituted as shown in said conventional example, there is a problem that the discharge tray of what can arrange the main part of equipment in the upper part of the main part of a copying machine projects greatly in the flank of the main part of a copying machine. Moreover, in the condition that what was set to the manuscript tray where the page of a double-sided manuscript

is arranged is discharged by the discharge tray when the discharge tray has been arranged in the upper part of the main part of a copying machine, although the sequence of the manuscript does not change, since a page becomes reverse, it is necessary to reverse each double-sided manuscript later. therefore — although actuation of a copy is simplified very much — many — when it copies using the double-sided manuscript of several sheets, it is the point of the after treatment of a manuscript and there is a problem that an operator's burden becomes large.
[0006] Then, as it is shown in JP,60-191960,A etc. in order to solve a problem which was mentioned above for example, in case a double-sided manuscript is turned to a manuscript tray and discharged, it is possible to use the device in which actuation which reverses a manuscript further is performed. While arranging a reversal device on the both sides, respectively and scanning a double-sided manuscript to the device which positions and scans a manuscript to a platen, the manuscript which the scan ended is reversed again and the manuscript tray enables it to be discharged in the automatic manuscript feed gear of said conventional example.
[0007] Moreover, in case a manuscript is returned to a manuscript tray, it enables it to use two methods in the mode discharged as it is and the mode discharged in the condition of making it reversed in the automatic manuscript feed gear of said conventional example. Therefore, when using said equipment, processing of a double-sided manuscript can be worked easily and an operator's burden can be mitigated.
[0008] However, it is necessary to make the both sides of a platen project greatly and to arrange a reversal device on them to the platen arranged in the upper part of the main part of a copying machine, and there is a problem that an automatic manuscript feed gear cannot be packed into a compact, in an automatic manuscript feed gear which was mentioned above. That is, in the electronic copying machine in recent years, lessening a member which can operate supply of a form etc. from a before [equipment] side and which constitutes a device and projects in a flank to the main part of a copying machine is performed. However, arranging an excessive lobe member in the upper part has the problem of needing greatly the floor space which an electronic copying machine occupies as a result, and needing the space in an office etc. for an excess, to such an electronic copying machine.
[0009]
[Objects of the Invention] This invention arranges a manuscript tray and a discharge tray in the location on a platen, and aims at offering the manuscript transport device which can constitute equipment in a compact while it establishes the device for solving the problem of the conventional automatic manuscript feed gear which was mentioned above, reversing a double-sided manuscript, and scanning, and the device in which the page of the manuscript discharged is arranged, respectively.
[0010]
[Means for Solving the Problem] This invention relates to a manuscript conveyance means have a platen arranged in the scan section for scanning a manuscript, a feed means to separate one sheet at a time from a thing on a manuscript laid in a manuscript tray, and to feed paper, and a discharge tray which receives a manuscript after said scan, and have said feed means and said discharge tray in an upper location of said scan section. It is characterized by to be inserted in the same direction as a direction which said manuscript was separated for invention of claim 1 of this invention from a manuscript tray, was turned up after feeding, was conveyed on a platen, was scanned, was turned up again after that, and came out of said feeding means to a reversal way, to be taken out from the still more nearly same side as said inserted direction, to be turned up again, and to be discharged by discharge tray.
[0011] A feed means to separate one invention of claim 2 from each thing on a manuscript laid in a manuscript tray, and to feed paper, They are a feed way which conveys a manuscript towards a platen top from said manuscript tray, and the path with which it connects with said feed way, and the part is shared. A reversal path which performs an operation which a manuscript [finishing / an one side scan] is reversed, and turns and locates a rear face of said manuscript in a platen, The manuscript conveyance section which prepared a conveyance belt driven to positive hard flow on said platen, A means which connects between a manuscript tray and a discharge tray which are arranged in the upper part of said manuscript conveyance section, and

said manuscript conveyance sections and discharge trays, turns a manuscript [finishing / a scan] to a discharge tray, and is sent out directly, In a reversal discharge means formed in the discharge section which established a means to discharge through a reversal discharge device, and said discharge section A reversal way which arranges in the condition of entering into the lower part of a manuscript tray, and has the gate and positive inversion roller equipment in the entrance section, As opposed to a manuscript which enabled selection in direct discharge and reversal discharge mode, and chose reversal discharge mode to a manuscript [finishing / ****** and said scan] It returns from the manuscript conveyance section, it inserts in a reversal way of a reversal discharge device through a way, and is characterized by making it discharge towards a discharge tray through exhaust passage from the gate arranged in the entrance section of said reversal way by actuation which carries out the inversion drive of the positive inversion roller equipment. Invention of claim 3 is characterized by having prepared in said discharge section and establishing in arbitration a discharge path which is made to reverse through a reversal way which has arranged said manuscript in the upper part of said conveyance belt, and the lower part of a manuscript tray, and is discharged, and direct exhaust passage directly discharged towards a discharge tray selectable.

[0012] As mentioned above, a member which projects too much on both sides of a manuscript transport device can be lost by arranging a manuscript tray and a discharge tray in the upper part, and arranging a manuscript conveyance device in which a reversal device was prepared in a portion of both sides of the platen, to a platen arranged in the upper part of a main part of a copying machine, respectively. And by constituting equipment in a compact, it is lost that an electronic copying machine equipped with said manuscript transport device occupies a floor space too much, and it becomes possible to contribute to a deployment of a business space. Moreover, in a manuscript transport device of this invention, since a reversal device is prepared in each of a feed zone and the discharge section, supply of a manuscript towards reading and handling of a manuscript after reading can be processed automatically, an activity of after treatment of a copy can be simplified, an one side manuscript and a double-sided manuscript can be made to be able to respond, and a manuscript transport device can be operated to arbitration.

[0013]

[Example] The manuscript transport device of this invention is explained according to the example illustrated. The automatic manuscript feed gear 1 shown in drawing 1 is arranged in the upper part of equipments, such as an automatic double-sided copying machine, and arranges the optical scanner which omitted illustration on the inferior surface of tongue of platen glass 3 in this electronic copying machine. And a manuscript is positioned in the criteria location set up by the sensor S3, and it is made to scan an image in it on platen glass 3. A manuscript is conveyed at arbitration to the longitudinal direction (an arrow head b and the direction of c) of drawing, and it enables it to position a manuscript in the criteria location set up by the sensor S3 by making said platen glass 3 correspond, arranging the conveyance section 20 constituted by the transport device 21, and driving the belt 22 of this transport device 21 to positive hard flow.

[0014] In addition, said transport device 21 constitutes the device in which guide a belt 22 with the pulleys 23 and 24 of both ends, drive one pulley like the case of the belt equipment conventionally used for the automatic manuscript feed gear etc., and positive hard flow is made to drive a belt 22. Two or more press roller 25 .... is arranged at the predetermined gap, and he is trying to convey in said conveyance section 20, in order to turn said belt 22 to a platen and to press it, pressing a manuscript to a platen.

[0015] The manuscript tray 5 and the discharge tray 6 are arranged in the upper part of said automatic manuscript feed gear 1, and this discharge tray 6 can be formed in it in the rockable condition in the upper part of the manuscript tray 5. moreover, on said manuscript tray 5, it corresponds to the send section of a manuscript — making — the NAJA roller 8 and a form — mackerel — the device which it sends out one sheet at a time is constituted, arranging ****** 9 and selling a manuscript. in addition, the thing which has feed equipment [be / the same as that of the device in which a form is sent out from a medium tray in common image formation equipment / it] which sends out said manuscript — it can use — in addition, the form of the

device of arbitration — mackerel — it is possible to arrange ****** etc. In the automatic manuscript feed gear of this invention, the location of a manuscript can be detected by the sensor S1 which prepared the manuscript support plate member possible [vertical movement] as a manuscript tray, and was formed in this manuscript tray, the device in which a support plate is raised can be established, and the location of the manuscript which touches a NAJA roller can be maintained uniformly in that case.

[0016] Between said manuscript trays 5 and conveyance sections 20, the feed zone 10 constituted as shown in drawing 2 is arranged. In the feed zone 10 shown in said drawing 2 , the feed way 11 from the manuscript tray 5 is connected to the manuscript conveyance way of a transport device. REJIRORA equipment 12 is arranged in the downstream of this feed way 11, the point of a manuscript is positioned to it, and the timing which sends out a manuscript towards the conveyance section is made to perform the operation which driven and sends out this roller equipment to it. Moreover, the reversal path 15 which prepared the connection in the edge of the downstream of said feed way 11 and the portion in the middle of the feed way 11 is arranged, and the manuscript returned from a feed zone is introduced through the gate 13 towards this reversal path 15. And as it conveys with the conveyance roller equipments 16 and 17 within the reversal path 15 and the feed way 11 is made to join again, actuation which reverses a manuscript is performed, and it is made to perform the operation guided towards the image reading section. Therefore, after scanning the 1st page of a manuscript, it enables it to scan the 2nd page of a manuscript by being reversed through the feed way 11 and setting to a platen again.

[0017] In the automatic manuscript feed gear 1 shown in said drawing 1 , the discharge section 30 arranged on the right-hand side of drawing consists of a return way 31, a reversal way 34, and exhaust passage 36, as shown in drawing 3 . It is made to perform the operation which arranges the gate 33 into the portion which connects said three manuscript conveyance ways, returns a manuscript to it, and is introduced into it towards the reversal way 34 from a way 31, and the operation sent out towards exhaust passage 36 from the reversal way 34. Moreover, although conveyance roller equipment 32 is arranged in said return way 31, the discharge roller 37 is formed in exhaust passage 36 and a manuscript is driven to an eject direction, the roller equipment 35 formed in the reversal way 34 is constituted as positive inversion roller equipment. And when introducing a manuscript into the reversal way 34, and in case said positive inversion roller equipment 35 is discharged, it is driven in the positive inversion direction, respectively, and it is made to demonstrate a conveyance operation of a form.

[0018] The case where a manuscript is conveyed is explained in the automatic manuscript feed gear of this invention which has next a configuration which was mentioned above. First, in scanning using an one side manuscript, in the example shown in drawing 1 , the manuscript D held in the manuscript tray 5 turns and sets the image side upwards. and in case a manuscript is scanned, it takes out from the thing (the 1st page) of the upper part with the NAJA roller 8 — having — a form — mackerel — it sells by ****** 9, and in response to an operation, one sheet dissociates at a time, the feed way 11 is conveyed in the direction of arrow head a, and the conveyance section 20 is supplied. And it is conveyed by the transport device 21 of the conveyance section 20 in the direction of arrow head b on a platen 3, and the scan of an image is made to be performed where the back end section of a manuscript is stopped in the location of a sensor S3.

[0019] After the scan of an image is completed, a transport device 21 drives again, drives a manuscript in the direction of arrow head b, conveys the inside of the return way 31 of the discharge section 30 in the direction of arrow head e, and inserts in the reversal way 34 through the inferior surface of tongue of the gate 33. After it performs the operation which conveys a manuscript in the direction of arrow head f with the positive inversion roller equipment 35 formed in said reversal way 34 and the back end section of this manuscript is detected by sensor S4 in that case, only predetermined time amount continues a conveyance operation of the manuscript in a reversal way, and where nip of the back end section of the manuscript is carried out with positive inversion roller equipment, it is stopped.

[0020] Subsequently, when the gate 33 is switched, it is set as the condition of connecting the

reversal way 34 and exhaust passage 36 and positive inversion roller equipment 35 is reversed, a manuscript is conveyed in the direction of arrow head g, and is made to discharge towards the discharge tray 6 through the discharge roller 37. Moreover, the back end section of the manuscript sent out from said reversal way 34 is detected by the sensor S5, after the information is inputted into a control unit, actuation which switches the gate 33 after predetermined time amount progress is performed, and it is made to make the reversal to the following manuscript cope with it. As mentioned above, since the manuscript deposited on the discharge tray 6 by making it go via the reversal way 34, and carrying out reversal discharge on the occasion of the discharge over a manuscript is held where a page [1st] image side is turned downward, it is prevented that a page is out of order.

[0021] On the other hand, in the case of a double-sided manuscript, where the sequence of a page is arranged to the manuscript tray 5, the 1st page is turned up and it is set. And the manuscript taken out by feed equipment is suspended by the transport device 21 through the feed way 11 in a scan location, and the scan of a page [1st] image is performed. Subsequently, a transport device 21 is driven in the inversion direction (the direction of arrow head c), it is introduced into the reversal path 15 through the inferior surface of tongue of the gate 13, and the inside of this reversal path 15 is conveyed in the direction of arrow head d. And the 2nd page is set on a platen 3 through the feed way 11 from said reversal path 15, and the scan of an image is performed.

[0022] Before the scan of the image of both sides of the manuscript of the 1st sheet is completed, the following manuscript is sent out from a manuscript tray and it is standing by in the location of REJIRORA 12 in the feed way 11. And the transport device 21 of the conveyance section 20 moves a manuscript in the direction of arrow head b, and is made to perform drawing in of the manuscript of the 2nd sheet, and an operation of discharge of the manuscript of the 1st sheet. Moreover, like the case of an one side manuscript, it is reversed through a reversal way and the manuscript discharged from the conveyance section is discharged towards the discharge tray 6.

[0023] (When arranging direct exhaust passage in the discharge section) the automatic manuscript feed gear of this invention — said example — in addition, as shown in drawing 4 and drawing 5 , the direct exhaust passage 38 which discharges a manuscript directly towards the portion of the discharge roller 37 from the return way 31 can be formed to the discharge section 30. Each part material which constitutes a feed zone 10 and the conveyance section 20 is arranged like the case of drawing 1 , and can make the conveyance operation which made each scan mode correspond perform to an one side manuscript and a double-sided manuscript in automatic manuscript feed gear 1a shown in said drawing 4 . On the other hand, in the 2nd example of this invention, as shown in details at drawing 5 , the direct exhaust passage 38 is arranged through the gate 39 in the middle of the return way 31 of the discharge section 30. And it enables it to choose through and the path made to discharge towards the discharge tray 6 through the discharge roller 37 as it is for said direct exhaust passage 38, without reversing a manuscript.

[0024] Where the page of an one side manuscript is arranged, when discharging a manuscript towards a manuscript tray, it can be made reversed through the reversal way 34, and can be made to discharge like the case of drawing 3 , in the example shown in said drawing 5 , where the image side of a manuscript is turned downward. On the other hand, the gate 39 is switched, and when the mode in which a manuscript is guided towards the direct exhaust passage 38 from the return way 31 is set up, a manuscript passes along the path shown in an arrow head h, and the image side of an one side manuscript is discharged in the condition of being turned upwards. however, the thing for which said path is chosen — few — when performing the scan to the manuscript of several sheets, without operating an excessive device, a manuscript can be made to discharge easily and it is used effectively in time.

[0025] (Drive of equipment) As the automatic manuscript feed gear of this invention constituted as mentioned above is shown in drawing 6 thru/or drawing 8 , three motors are used and it enables it for each motor to perform a conveyance operation of the manuscript in each field. The drive system shown in drawing 6 is explained taking the case of the case where it drives for the

equipment of drawing 1 . Said motor 40 uses the stepping motor driven to positive hard flow, and drives the REJIRORA equipment 12 arranged at a feed zone 10, the conveyance roller equipments 16 and 17 formed in the reversal path 15, and the pulley 23 to a belt 22.
[0026] And since it drives said belt 22 in the direction (the direction of arrow head b) which conveys a manuscript in conveying a manuscript towards a platen from the feed way 11, it drives in the normal rotation direction to a pulley 23. Although he is trying to drive a manuscript in the direction of arrow head d to the conveyance roller equipments 16 and 17 formed in the reversal path 15 in that case, in the mode mentioned above, a manuscript is in the condition of not existing, within the reversal path 15. Moreover, said motor 40 is driven in the inversion direction, in case the reversal path 15 is reversed through the manuscript which the scan of the image of the 1st page ended, a belt 22 drives in the inversion direction, and although the operation which turns and returns a manuscript to the reversal path 15 is performed, the drive to this REJIRO-RA equipment is not performed by the one-way clutch which arranges to REJIRORA equipment 12.
[0027] And the actuation which reverses said belt 22, and the conveyance roller equipment arranged in a reversal path are driven so that a manuscript may be conveyed in the direction of arrow head d, it reverses a manuscript, and is conveyed even in the location of REJIRO-RA equipment 12. And a motor 40 is rotated normally, REJIRO-RA equipment 12 and a belt 22 are driven in the normal rotation direction, and it is made to make a manuscript set on a platen after that. In addition, only the inversion of a motor can be followed and the conveyance roller equipments 16 and 17 formed in said reversal path 15 can also be constituted as a thing of a device which rotates, although rotation of the positive hard flow of a motor also constitutes the device rotated only to one side.
[0028] the NAJA roller 8 with which the drive system shown in drawing 7 constitutes feed equipment, and a form — mackerel — ****** 9 is driven, DC motor 41 is used, and the device in which roller equipment is driven only to one side is constituted. And it is made to send out, driving a motor 41 and selling one manuscript at a time with the signal from an automatic double-sided copying machine. after [and] the point of a manuscript was detected by the sensor S2 — predetermined time amount — a form — mackerel — after continuing actuation of conveyance by ****** and positioning the point of a manuscript to REJIRO-RA equipment 12, the drive of a motor 41 is stopped.
[0029] The device in which the drive to the roller equipment arranged in the discharge section 30 is performed consists of drive systems shown in drawing 8 using SUTEPPINKUMOTA 42 which can carry out a positive inversion. Moreover, in said drive system, the drive system is connected through an one way clutch to the discharge roller 37. And in rotating said motor 42 normally, it performs the drive to the conveyance roller equipment 32 of a return way, and the positive inversion roller equipment 35 of the reversal way 34.
[0030] On the other hand, in reversing a motor 42, conveyance roller equipment 32, positive inversion roller equipment 35, and the discharge roller 37 are reversed, respectively, and it performs the operation which a manuscript is turned [operation] to exhaust passage 36 and makes it convey from the reversal way 34. In addition, since actuation of the inversion to said discharge roller 37 is in the condition that a manuscript does not exist in the return way even if it is set up as a direction which turns a manuscript to a discharge tray and discharges it and reverses conveyance roller equipment 32 on the occasion of actuation of the discharge, a problem will be produced. Therefore, in the automatic manuscript feed gear of this invention, the drive to each drive motor can be acted, it can be made to be able to respond to the scan of the image of a manuscript according to the program set as the control unit of an automatic double-sided copying machine, and a conveyance operation of a manuscript can be performed.
[0031]
[Effect of the Invention] the manuscript transport device of this invention arranges a device which was mentioned above, can make an one side manuscript and a double-sided manuscript able to respond, and can be operated while it does not have the thing of a feed zone and the discharge section for which the device of equipments, such as it, is complicated especially and can simplify the activity of the after treatment of a copy, since it was alike, respectively and the

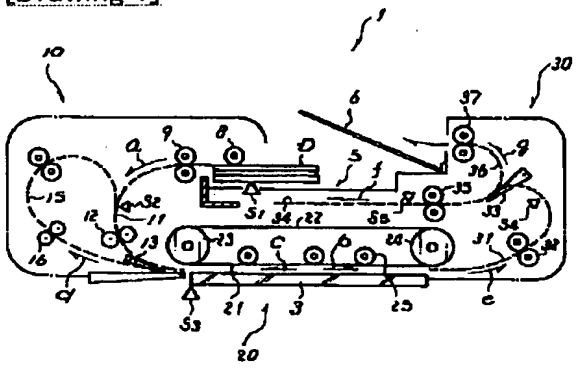
reversal device is established. And the member which projects too much on both sides of a manuscript transport device can be lost by arranging a manuscript tray and a discharge tray in the upper part, and arranging the manuscript conveyance device in which the reversal device was prepared in the portion of the both sides of the platen, to the platen arranged in the upper part of the main part of a copying machine, respectively. Moreover, by constituting equipment in a compact, it is lost that the electronic copying machine equipped with a manuscript transport device occupies a floor space too much, and it becomes possible to contribute to a deployment of a business space.

[Translation done.]

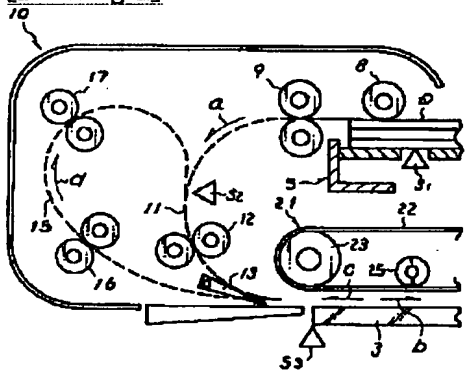
* NOTICES *

DRAWINGS

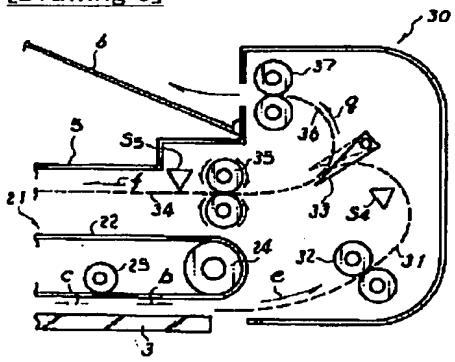
[Drawing 1]



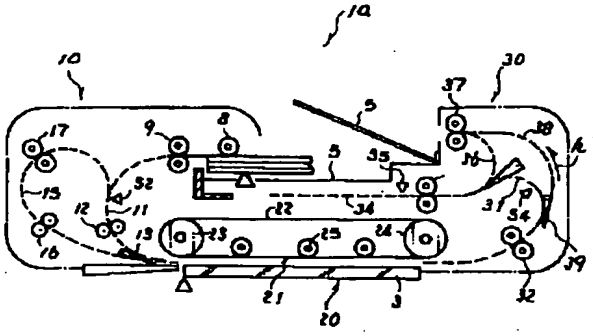
[Drawing 2]



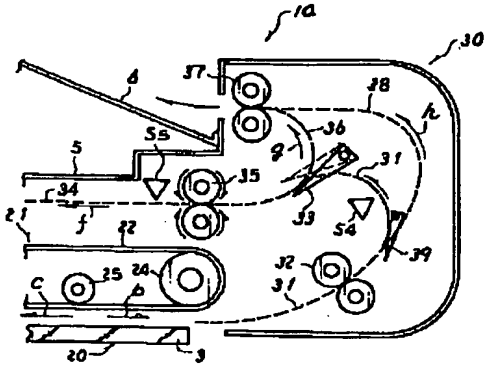
[Drawing 3]



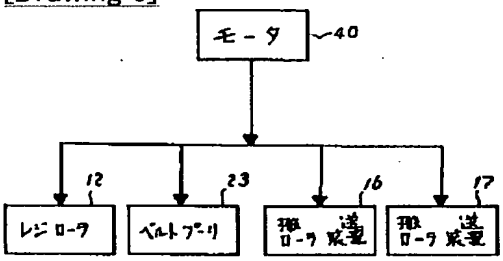
[Drawing 4]



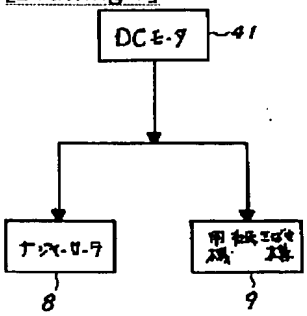
[Drawing 5]



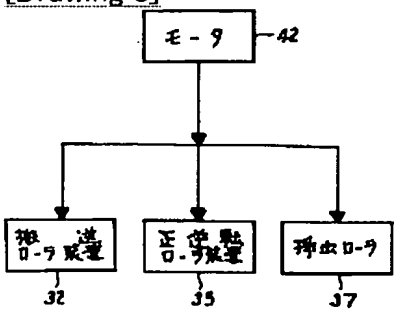
[Drawing 6]



[Drawing 7]



[Drawing 8]



[Translation done.]